

## CLAIMS:

1. A method for providing a selective input and output of information into and from a memory element built into each sample medium carrier of a plurality of sample medium carriers that carry samples for analysis, said method comprising the steps of:

providing a plurality of sample medium carriers, each holding at least one sample medium with specific samples to be analyzed and having a built-in memory element for inputting/outputting related information, said built-in memory element having first input/output contacts for inputting/outputting said information;

providing handling means for handling said sample medium carriers having second inputting/outputting contacts connected to a central processing unit capable of storing and processing said information; and

inputting/outputting said information into/from said built-in memory elements while handling said sample medium carriers with the use of said handling means.

2. The method of Claim 1, wherein said handling means are selected from the group consisting of grippers for loading/unloading and transporting said sample medium carriers and a storage cassette for said sample medium carriers, said storage cassette having individual cells for said sample medium carriers; in the case of said handling means in the form of said storage cassette said step of handling comprising inserting/extracting said sample medium carriers into/from said cells, and said step of inputting/outputting said information into/from said memory element of each of said sample medium carriers being carried out when said sample medium carriers are located in said cells of said storage cassette.

3. The method of Claim 2, wherein said information is selected from the group consisting of location of said samples on said at least one sample medium, location of said sample medium carriers, events that occurred with said samples, events that are scheduled to occur with said samples carried, and results of analysis of said samples.
4. The method of Claim 2, wherein said samples are intended for analysis with the use of mass spectrometry.
5. The method of Claim 2, wherein said samples are intended for analysis selected from the group consisting of mass spectrometry, optical spectroscopy, fluorescent UV-visible spectroscopy, infrared spectroscopy, liquid chromatography, gas chromatography, capillary electrophoresis, and combination of the above.
6. The method of Claim 1, wherein said sample medium is selected from the group consisting of a sample plate and a sample vial.
7. The method of Claim 3, wherein said sample medium is selected from the group consisting of a sample plate and a sample vial.
8. The method of Claim 5, wherein said sample medium is selected from the group consisting of a sample plate and a sample vial.
9. A system of sample plate carriers for handling with sample medium carrier handling means, said system comprising:
  - a plurality of sample medium carriers, wherein each sample medium carrier of said plurality comprises:

a carrier body having means for supporting at least one sample-carrying medium with at least one sample;

memory means built-in into said carrier body, said memory means having first memory input/output contacts for inputting/outputting information;

engagement means provided on said carrier body for engagement with said sample medium carrier handling means, said engagement means having second inputting/outputting contacts;

a central processing unit connected to said second input/output contacts and connectable to said first input/output contacts of said memory means when said engagement means engages said sample medium carrier handling means.

10. The system of Claim 9, wherein said sample medium carrier handling means is selected from the group consisting of grippers for loading/unloading and transporting said sample medium carriers and a storage cassette for said sample medium carriers, said storage cassette having individual cells for said sample medium carriers.

11. The system of Claim 10, wherein said storage cassette comprises:

a plurality of cells for insertion of said sample medium carriers;

said second input/output contacts being provided in each cell of said plurality of cells for electrical contact with said first input/output contacts of said carrier bodies when said carrier bodies are inserted into said cells;

an inlet/outlet port on said information input/output station with a plurality of electrical terminals, each of said electrical terminals being electrically connected to respective second input/output contacts of a respective cell of said storage cassette.

12. The system of Claim 10, wherein said sample carrying medium comprises a sample medium and wherein said engagement means comprises at least one profiled opening for interaction with said sample medium carrier handling means.

13. The system of Claim 10, wherein said means for supporting a sample-carrying medium is a recess formed in said carrier body.

14. The system of Claim 13, wherein said carrier body further comprises a lock for locking said sample medium in said carrier body.

15. The system of Claim 10, wherein said memory means is selected from a groups consisting of an electronic smart chip device and a cylindrical body with at least one flat side and a cylindrical side wall, one of said first input/output contacts of said memory means comprising said side wall and another of said first input/output contacts of said memory means comprising said at least one flat side.

16. The system of Claim 15, wherein said sidewall comprises a signal contact, and said cylindrical sidewall comprises an earth contact.

17. The system of Claim 11, wherein said memory means comprises a cylindrical body with at least one flat side and a cylindrical side wall, one of said first input/output contacts of said memory means comprising said side wall and another of said first input/output contacts of said memory means comprising said at least one flat side.

18. The system of Claim 17, wherein said sidewall comprises a signal contact, and said cylindrical sidewall comprises an earth contact.

19. The system of Claim 10, wherein said sample engagement means comprise at least two different gripping mechanisms and wherein said engagement means of said carrier body comprises at least two sets of different openings for interaction with said at least two different gripping mechanisms.

20. The system of Claim 19, wherein one set of said two sets of different openings are T-shaped openings and a plurality of openings arranged with a predetermined pattern, one of said two gripping mechanisms comprising a gripper having T-shaped projections insertable into said T-shaped openings and the other of said two gripping mechanisms is a sample-plate receiver/insertor having projections arranged with the same predetermined pattern as said plurality of openings and engageable with said plurality of openings for receiving/releasing said sample medium from sample medium carriers.

21. The system of Claim 11, wherein said sample engagement means comprise at least two different gripping mechanisms and wherein said engagement means of said carrier body comprise at least two sets of different openings for interaction with said at least two different gripping mechanisms.

22. The system of Claim 21, wherein one set of said two sets of different openings are T-shaped openings and a plurality of openings arranged with a predetermined pattern, one of said two gripping mechanisms comprising a gripper having T-shaped projections insertable into said T-shaped openings and the other of said two gripping mechanisms is a sample-plate receiver/insertor having projections arranged with the same predetermined pattern as said plurality of openings and engageable with said plurality of openings for receiving/releasing said sample medium carriers.

23. The system of Claim 12, wherein said sample engagement means comprise at least two different gripping mechanisms and wherein said engagement means of said carrier body comprise at least two sets of different openings for interaction with said at least two different gripping mechanisms.

24. The system of Claim 23, wherein one set of said two sets of different openings are T-shaped openings and a plurality of openings arranged with a predetermined pattern, one of said two gripping mechanisms comprising a gripper having T-shaped projections insertable into said T-shaped openings and the other of said two gripping mechanisms is a sample-plate receiver/insertor having projections arranged with the same predetermined pattern as said plurality of openings and engageable with said plurality of openings for receiving/releasing said sample medium carriers.

25. The system of Claim 13, further provided with a removable protective shield insertable into said recess of said carrier body as an additional means for protecting said samples and said sample-carrying medium from contamination.

26. The system of Claim 12, further provided with a removable protective shield insertable into said recess of said carrier body as an additional means for protecting said samples and said sample-carrying medium from contamination.

27. The system of Claim 14, further provided with a removable protective shield insertable into said recess of said carrier body as an additional means for protecting said samples and said sample-carrying medium from contamination.

28. The system of Claim 9, wherein said sample medium carrier body has asymmetric features and wherein said cells of said information input/output station have means for engagement with said asymmetric features so that said

sample medium carriers can be inserted into said cells only with a predetermined orientation.

29. The system of Claim 14, further provided with a removable protective shield insertable into said recess of said carrier body as an additional means for protecting said samples and said sample-carrying medium from contamination.

30. The system of Claim 9, wherein said sample medium is selected from the group consisting of a sample plate and a sample vial.

31. The system of Claim 15, wherein said sample medium is selected from the group consisting of a sample plate and a sample vial.

32. The system of Claim 20, wherein said sample medium is selected from the group consisting of a sample plate and a sample vial.

33. The system of Claim 27, wherein said sample medium is selected from the group consisting of a sample plate and a sample vial.

34. A sample plate carrier that carries a sample plate with a plurality of samples for use in conjunction with different automatic grippers and a data input/output station comprising:

- a carrier body having a substantially rectangular configuration with a peripheral portion and a central portion;

- a recess in said central portion to accommodate said sample plate with a plurality of samples; and

- at least two sets of different openings on said peripheral portion for engagements with said different automatic gripper.

35. The sample plate carrier of Claim 34, further comprising a resettable memory unit with input/output terminals for inputting and outputting data transferable to and from said data input/output station.

36. The sample plate carrier of Claim 35, wherein said resettable memory unit is built-in into said peripheral portion of said carrier body.

37. The sample plate carrier of Claim 36, wherein said resettable memory unit comprises a cylindrical body having flat sides and a cylindrical surface with one of said flat sides being one of said input/output terminals and with said cylindrical surface being another of said input/output terminals.

38. The sample plate carrier of Claim 34 for use in MALDI mass spectrometry.

39. The sample plate carrier of Claim 37 for use in MALDI mass spectrometry.

40. The sample plate carrier of Claim 34, further comprising a barcode information carried by said carrier body and containing information relating at least to said samples.

41. The sample plate carrier of Claim 34, further comprising a barcode information carried by said carrier body and containing information relating at least to said samples.